

UNITED STATES
DEPARTMENT OF LABOR
MINE SAFETY AND HEALTH ADMINISTRATION
COAL MINE SAFETY AND HEALTH

REPORT OF INVESTIGATION
Underground Coal Mine

Fatal Fall of Rib Accident
February 15, 2003

Wabash Mine
Wabash Mine Holding Company
Keensburg, Wabash County, Illinois
I. D. No. 11-00877

Accident Investigators

Michael D. Rennie
Coal Mine Safety and Health Inspector

Dennis R. Plab
Coal Mine Safety and Health Inspector Roof Control

Leland Payne
Mine Safety and Health Specialist (Training)

Originating Office - Mine Safety and Health Administration
District 8
2300 Willow Street, Suite 200, Vincennes, Indiana 47591
James K. Oakes, District Manager

Release Date: 04-29-2003

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OVERVIEW

On Saturday, February 15, 2003, a fatal fall of rib accident occurred at the Wabash Mine Holding Company, Wabash Mine. At approximately 2:30 a.m. Jerry W. Neese, age 56, a roof-bolting machine operator, was working on the B-2 working section when a large coal and rock rib struck him causing fatal injuries. Neese was working with Lee R. McRay, roof-bolting machine operator, and had been performing rib-bolting duties prior to the accident. Two other roof-bolting machine operators were simultaneously installing roof bolts at the front of the roof-bolting machine. Janice Davidson was working along the left side and John Garner was working along the right side of the machine.

McRay stated that he and Neese had drilled one rib hole in the last open crosscut, just outby the No. 7 Entry junction. As McRay and Neese were drilling the second rib hole a small portion of the roof and rib dribbled and they stopped drilling. Neese told McRay “there is a crack down the rib, and it went all the way down”. Neese informed McRay he was going to get a pry bar, and proceeded along the left side of the roof-bolting machine toward the face of No. 7 Entry. McRay also started to walk into the same area, but stopped and stepped back when the left rib fell. The rib just brushed McRay’s legs, but he was able to retreat to safety. McRay could not see either Neese or Davidson because of the amount of coal and rock that had fallen. McRay climbed on top of the roof-bolting machine and saw Neese lying face up, with large amounts of coal and rock on his body, with only his feet and face exposed. Measures to rescue Neese were delayed due to coal and rock from the rib continuing to fall. Once the coal and rock rib had stopped falling, McRay, along with other workers, extricated Neese and transported him to the surface. Davidson later told everyone that she had moved forward under the ATRS and around the right side and to the rear of the roof bolter.

GENERAL INFORMATION

The Wabash Mine Holding Company, Wabash Mine, is located east of Illinois Route 1 in Keensburg, Wabash County, Illinois. The Wabash Mine Holding Company is a subsidiary of RAG Midwest Holding Company. The mine employs 195 people, 175 underground and 20 on the surface. The mine is opened into the Illinois No. 5 coal seam by two intake air/ elevator shafts, a return upcast shaft, and a split compartment material/belt slope. The coal seam at this mine averages 84 inches in thickness. Ventilation is provided by a main mine fan exhausting a total of 839,000 cubic feet of air per minute. The most current laboratory analysis of return air samples collected by the Mine Safety and Health Administration (MSHA) revealed methane liberation of 1,915,437 cubic feet in a 24-hour period. During advance mining, face areas are ventilated by blowing line curtain, and scrubber equipped continuous mining machines are used. The immediate mine roof consists of 60 feet of gray shale and the maximum overburden for this mine is approximately 1,000 feet. The entry height at the accident site was 8 ½ feet overall, which consisted of 6 ½ feet of coal and 2 feet of rock.

The mine produces coal on two shifts per day, which are daylight and third shift, and the second shift is used for maintenance. The mine produces 1,057 tons of raw coal per day from three mechanized mining unit super sections. Each unit has two separate power centers providing power to the equipment. Section haulage is accomplished by diesel and battery ram cars, which dump onto a series of conveyor belts that transport the coal to the surface preparation plant. After cleaning, the coal is shipped via train for transport to utility customers.

The MSHA District Manager approved the Roof Control Plan on April 24, 2002 and the mine training plan on January 27, 2003.

The principal officers for the Wabash Mine at the time of the accident were:

President.....	Jim Roberts
General Manager.....	William Kelly
Mine Manager.....	Terry W. Theys
Engineering Manager.....	Jeff Gregg
Safety Director	Perry R. Whitley

An MSHA Safety and Health Inspection (AAA) that began on January 2, 2003 was in progress at the time of the accident. The previous MSHA Safety and Health Inspection (AAA) was completed on December 24, 2002.

The Non-Fatal Days Lost (NFDL) incident rate for calendar year 2002 was 7.43 for underground mines nationwide and 8.26 for the Wabash Mine.

DESCRIPTION OF ACCIDENT

On Saturday, February 15, 2003, the midnight shift crew for the MMU-022, B-2 working section, entered the mine at approximately 12:00 a.m. CST under the supervision of Ray Evans, Section Foreman. The crew, which consisted of eleven persons including the foreman, traveled by diesel-powered rubber tired personnel carriers from the Cowling Portal bottom through the main travelways to the B-2 working section.

Evans stated that Mine Manager Alan Fox told him that a power move was not yet complete on the left side of the unit because more high voltage cable was needed. As the left side roof bolter was without power, Evans decided to send the two extra roof bolting machine operators to help with other tasks. He then instructed Jerry Neese and Lee McRay, the left side roof bolters, to help with ventilation, load supplies, and then rib bolt behind the right side roof-bolting machine.

Upon arriving on the section at approximately 12:50 a.m. CST, Evans proceeded across the working faces to make his routine examinations. After the faces were examined, Evans briefed the crew on the location of equipment and where they would be mining. At the time of the accident, the B-2 unit was advancing six entries, numbered 2 to 7, left to right. Evans informed the crew that a partial cut of approximately fifteen feet in depth had been mined in No. 7 Entry and mining would continue in that entry.

Mining operations then began in the No. 7 Entry. Al Mason, continuous mining machine operator, stated that when he started mining he first cleaned the ribs due to the amount of rib rash, and then continued mining. Mason stated that the mine roof looked good when he started the cut, but as he advanced approximately twenty feet, a section of mine roof fell on the mining machine. At this point Mason backed up and trimmed the loose mine roof down. He then backed the mining machine out of the cut, and stated that the cut looked good. He then proceeded to clean the No.7 Entry and drag the mining machine head along the rib to knock down anything that might be loose. Mason stated that when he completed mining in the No.7 Entry, the conditions looked as good as any that they had been mining. Mason then moved the mining machine from No.7 Entry to No. 6 Entry to allow the roof bolting machine access to the No.7 Entry.

Janice Davidson and John Garner, right side roof bolting machine operators, moved the Fletcher Roof Ranger roof-bolting machine into position to start roof bolting. They surveyed the area and decided to install additional bolts before they started roof bolting the cut. Garner stated the mine roof was smooth, and the rib line was better than most of the ribs they had seen and worked beside on the unit. Evans talked with Neese in the last open crosscut just prior to the accident, and then went to the mine phone because the belts were down. Garner and Davidson continued roof bolting while Neese and McRay started rib bolting behind the bolter on the left inby corner.

McRay and Neese were using a hydraulically operated two-man hand drill to drill the rib holes. They had drilled one hole in the crosscut rib and were in the process of drilling the

second hole, when a small portion of mine roof and rib fell down in front of them. Neese told McRay there was a crack and it went all the way down the rib. Neese said he was going to get a pry bar and pull the rib down. Neese walked between the left rib and the left side of the roof-bolting machine, and was close to the front of the machine when the rib fell. McRay started to follow Neese, but decided to go back when the rib fell, just brushing his legs.

Garner stated that they had completed installation of the fourth row of bolts, and were in the process of moving the machine to the next row when the accident occurred. Garner noticed Neese walking along the left side of the roof-bolting machine, but did not think anything was uncommon about seeing someone around the machine. Garner had moved the machine about to the next row when he saw the rib fall and strike Neese. Garner saw Davidson out of the corner of his eye move forward, and later found out that she had moved under the Automated Temporary Roof Support System (ATRS) and around the right side to the rear of the roof-bolting machine. Garner then stopped the machine by hitting the panic bar, went around under the ATRS, and saw the amount of rock that was on Neese. McRay climbed on top of the roof bolter and observed Neese covered up and asked for help. At this time, Garner proceeded to the rear of the machine to inform the continuous mining machine operators and to request help. He also told Davidson to get the foreman and call for an ambulance.

Evans stated that someone came running and told him that Neese was under a rib and to get help. Evans immediately went to the scene and climbed on the roof-bolting machine to see if he could get to Neese. Evans saw that Neese was completely covered with rock and coal with the exception of his feet and part of his face. Evans removed some material from the head of Neese, and checked for signs of life, but found none. Evans, Mason, and scoop operator Mike Memmering, uncovered Neese and placed him on a backboard. Neese was then placed in the unit pickup truck/ambulance for the ride to the Cowling Portal bottom, arriving at approximately 3:00 a.m. John Hohn, section foreman/EMT, met the ambulance on the way out of the mine and took over care of Neese.

The Wabash General Ambulance Service arrived at the Cowling Portal at 2:51 a.m. and took over the care of Neese at 3:05 a.m. Raymond Giffin, Karen Rahmoeller, and Christopher Wagner, Paramedics, found no pulse and the patient in pulmonary and cardiac arrest. The ambulance left the mine at 3:22 a.m., and transported Neese to Wabash General Hospital in Mt. Carmel, Illinois, where Craig S. Racster, Wabash County Deputy Coroner, pronounced the victim dead.

INVESTIGATION OF THE ACCIDENT

Steven R. Kattenbraker, Field Office Supervisor for the District 8 Mine Safety and Health Administration Benton, Illinois Field Office, was notified by Terry W. Theys, Mine Manager, on Saturday, February 15, 2003, at approximately 3:25 a.m. CST that a fatal rib fall accident had occurred on the B-2 working section. After being informed of the accident, Dennis R. Plab, Roof Control Specialist, and Mark A. Odum, Roof Control Supervisor, were dispatched to the mine to ensure that the accident site was secure, and issue a 103(k) Order to ensure the safety of the miners.

MSHA dispatched an accident investigation team from the Benton, Illinois Field Office, and the Vincennes, Indiana District Office to the Wabash Mine on Saturday, February 15, 2003. Upon arriving at the mine, the inspection team was briefed concerning the circumstances surrounding the accident. The accident team made contact with representatives from the Illinois Department of Natural Resources - Office of Mines and Minerals, mine management, and the United Mine Workers. Preliminary interviews were conducted with those individuals who had actual knowledge of the facts surrounding the accident. The accident investigation team then traveled to the accident site and jointly began the investigation assisted by mine management, the Office of Mines and Minerals, and the United Mine Workers. A formal session was held on February 19, 2003, at the Wabash Mine conference room, to interview individuals known to have actual knowledge of the facts surrounding the accident. Leland R. Payne, Education and Training Specialist from the Education Field Services group, arrived on February 19, 2003, and also assisted in the investigation.

Appendix A is a list of persons who participated in the investigation. Appendix B is a list of persons interviewed on a non-confidential basis, or who provided information relevant to the investigation. Underground investigative procedures included mapping of the accident site. Appendix C depicts the extent of mining in the B-2 working section. Appendix D depicts the area of the immediate accident site.

DISCUSSION

Human Factors

Neese had no known physical impairments or medical conditions that would have contributed to the accident. There were three eyewitnesses that stated they saw the rib strike Neese.

Environmental Factors

This area of the mine exhibited rib pressures and stresses due to the overburden pressure. The depth of overburden cover at the accident location was approximately 900 feet. The immediate mine roof strata consisted of 60 feet of gray shale. The working section mine floor was dry and smooth.

Physical Factors

The Accident Site

The accident occurred in the No. 7 Entry on the B-2 working section, 240 feet in by survey station 59710. The coal and rock rib that covered Neese measured approximately 30 feet in length, 8 feet in height, and approximately 24 inches in thickness. The coal and rock that fell had an approximate weight of 23 tons.

Neese was walking along the left side of the roof-bolting machine, while Garner trammed the machine forward to install the next row of roof bolts when the rib fell. The left side of the roof-bolting machine was approximately 3.5 feet from the original rib at the time of the accident. The No. 7 Entry had been mined to a depth of approximately 35 feet.

The preshift examiners reports revealed that examinations for the B-2 working section, were being made and recorded. No hazardous conditions were recorded for the preshift examination for the midnight shift.

The B-2 Working Section

The B-2 working section was originally an eight-entry room and pillar section, with a crosscut centerline spacing of 80 feet. The unit had dropped No. 8 Entry on January 16, 2003, and dropped No. 1 Entry on January 22, 2003, due to problems with ventilation. The B-2 unit had been driven in a southeast direction, but had experienced adverse roof conditions. The working section was subsequently turned on a northeast angle to help control the roof and rib conditions. The B-2 working section was mining toward an old B-2 worked out panel, and had been experiencing severe adverse roof and rib conditions. While working in the old B-2 panel, adverse roof conditions and some squeezing were encountered. The roof and rib conditions worsened as the B-2 working section got closer to the old panel. When mining in the No. 7 Entry, a layer of the immediate mine roof, approximately 24 inches in thickness, fell onto the continuous mining machine and was subsequently loaded out and the entry trimmed.

The Roof Bolting Machine

The roof-bolting machine used in the No. 7 Entry of the B-2 working section was a J.H. Fletcher II, Model No. RR11-15, Serial No.93024, dual boom, with a single bar ATRS. The roof-bolting machine had been operating properly the day of the accident. The ATRS on the Fletcher double boom roof-bolting machine was released from the mine roof and the machine was being moved forward at the time of the accident. There was no evidence to indicate that lowering the ATRS caused the release of the coal and rock rib involved in the accident. Jerry Neese and Lee McRay were rib bolting behind the right side bolter, using a two-man hydraulically operated, hand held drill gun. This drill was located at the rear of the machine and was used to drill the rib holes and tighten the rib bolts. The maintenance records were up-to-date and there were no unsafe conditions listed for this roof-bolting machine.

The Roof Control Plan

The MSHA District Manager approved the Roof Control Plan for the mine on April 24, 2002. The plan specified that roof bolts shall be installed on a maximum of five-foot centers with the bolts nearest to the ribs to be installed a maximum of four feet from the rib. The maximum entry width specified in the plan is 20 feet. Entry and crosscut centers may be from 60 to 120 feet in mains/submains. In short term workings of panels and rooms, entry centers may be from 50 to 120 feet, and crosscut centers may be from 60 to 120 feet. The four-way diagonal intersection measurement shall be less than or equal to 70 feet. Roof support is typically provided by 60 inch fully grouted, grade 60 rebar bolts on a 5-foot by 5-foot pattern. The rib-bolting plan requires that when the mining height is below 8 feet, a minimum of four bolts shall be installed on five-foot centers on the rib corners only. When the mining height exceeds 8 feet, full rib bolting is required on five-foot centers. Rib support is provided by a minimum 48-inch conventional roof bolt and a 36-inch rib board used for bearing surface. There were very few additional measures taken when the ribs rashed beyond the maximum entry widths allowed in the plan, even though the roof control plan requires excessive widths to be timbered or cribbed.

TRAINING RECORDS

An examination of the training records revealed that all persons working in the B-2 working section had received all of the required training in accordance with 30 CFR, Part 48. Neese had received annual retraining on October 12, 2002, and task training for a roof-bolting machine on November 2, 1996.

ROOT CAUSE ANALYSIS

A root cause analysis was conducted. Causal factors were identified that could have averted the accident entirely or mitigated the severity of the accident.

Causal Factor: The seriousness of the deteriorating roof and rib conditions on the B-2 working section were not fully evaluated. Little or no additional measures above the minimum specified in the roof control plan were taken to control the roof and ribs.

During development of the B-2 working section, the mine roof was supported with 5-foot fully grouted roof bolts. The coal ribs were supported by installing four 4-foot conventional bolts on the rib corners only. The B-2 unit had initially been developed in a southeast direction, but roof and rib conditions had deteriorated and the unit direction had been changed to a northeast direction. As the unit advanced toward the old B-2 worked out area, conditions again worsened. In the two weeks prior to the accident, the rib conditions worsened considerably. Statements and physical evidence indicated that the B-2 unit was experiencing severe adverse roof and rib conditions prior to the accident. Statements indicated that the ribs would suddenly pop off without warning.

Corrective Actions: Abnormal, unusual, or unexpected roof conditions should be elevated to the attention of upper management immediately. The roof control plan should be

reviewed with supervisors and all section workers to assure that they understand the requirements of the plan and that additional measures must be taken when unusual hazards are encountered.

Causal Factor: On-shift examinations for the B-2 working section were inadequate. Prior to the accident there were no or few entries made in the on-shift examination report indicating that the certified person recognized the hazards which existed. The records were reviewed from January 26, 2003, through February 28, 2003. The underground portion of the investigation began on February 15, 2003, and continued on February 17, 2003, on the B-2 working section. Citations were issued for excessive entry widths, wide diagonal intersection measurements, and wide roof bolt spacing. A citation was also issued for a violation of the approved mine ventilation plan for not following proper procedures when cutting into abandoned panels, resulting in poor ventilation in the section return which allowed methane to exist in excess of 5 percent. A review of the on-shift record books revealed that the on-shift certified person failed to recognize the hazardous conditions on the B-2 working section, even though statements from miners revealed that the roof and rib conditions had been deteriorating for the past several weeks.

Corrective Actions: The certified persons making the examinations should identify and record all hazardous conditions and make the appropriate corrections. Mine management should develop and follow procedures to identify and correct any and all hazardous conditions. Management should be aware that simply not entering hazardous conditions into the on-shift records is unacceptable.

CONCLUSION

On February 15, 2003, a fatal fall of rib accident occurred at approximately 2:30 a.m. in the B-2 working section resulting in fatal injuries to one miner. The accident occurred when the victim walked between the left side of the roof bolting machine and the left coal and rock rib when the rib fell, crushing the victim beneath the coal and rock.

The roof and rib conditions had been deteriorating in the B-2 working section for several weeks prior to the accident. There had been little or no extra measures taken to support the roof and ribs.

The accident resulted from a failure to determine the seriousness of the deteriorating roof and rib conditions in the B-2 working section.

Approved by:

JAMES K. OAKES
District Manager

ENFORCEMENT ACTIONS

Contributing violations (in addition to a 103(k) Order)

Order, 103(k) The mine has experienced a fatal accident in the B-2 working section. A roof and rib fall occurred causing fatal injuries to a miner while he was in the process of rib bolting. This order is issued to assure the safety of all persons at this operation. It prohibits all activity in the mine until MSHA has determined that it is safe to resume normal mining operations. Only those persons selected from company officials, state officials, the miners' representative and other persons who are deemed by MSHA to have information relevant to the operation may enter the mine.

Citation, 104(a), 75.220(a)(1), S&S, High Negligence. During the period of at least two weeks prior to February 15, 2003 unusual and hazardous roof and rib conditions were encountered on the B-2 working section, 022 MMU. During this period excessive rib popping and sloughing occurred due to increased pressures. Additional measures beyond the minimum specified in the roof control plan were not taken to protect persons from the unusual hazards. The mine has experienced a fatal fall of rib accident on the B-2 working section, 022 MMU, on February 15, 2003.

Citation, 104(a), 75.362, S&S, High Negligence. Adequate on-shift examinations were not conducted on the B-2 working section. Hazardous roof and rib conditions as evidenced by excessive popping and sloughing of the ribs due to increased pressures and stresses existed, but were not identified by the persons conducting the examinations. These conditions were obvious, widespread, and were in areas traveled by the certified persons conducting the examinations. Miners on the B-2 working section indicated that these conditions had existed for approximately two weeks prior to a fatal rib fall accident that occurred on February 15, 2003.

Additional hazardous conditions, which were not contributory to the accident, were also present on the B-2 working section. These hazardous conditions constituted violations of the regulations and were cited in violations Nos. 7566446, 7577172, 7577171, and 7575479. The certified person's failure to recognize and correct obviously hazardous conditions further demonstrates that adequate examinations were not conducted.

APPENDIX A

Listed below are those persons who participated and/or were present during the investigation:

WABASH MINE HOLDING COMPANY

William Kelly	General Manager
Terry W. Theys	Mine Manager
Perry R. Whitley	Safety Director
Jeff Gregg	Engineering Manager
Michael Pelish	Human Resources

UNITED MINE WORKERS OF AMERICA

Joe Urban	District 12 Safety Representative
Joe Hamilton	Local No. 1791 President
Wesley Beasley	Local No. 1791 Safety Committeeman
Danny Whitler	Local No. 1791 Safety Committeeman
James Miller	Local No. 1791 Safety Committeeman

WABASH COUNTY OFFICIALS

Robert Cunningham	Coroner Wabash County
Craig S. Racster	Deputy Coroner Wabash County
Shawn Keeps	Deputy Coroner Wabash County

ILLINOIS DEPARTMENT OF NATURAL RESOURCES **OFFICE OF MINES AND MINERALS**

Neal Merrifield	Director
Don McBride	Mine Safety Division Manager
Art Rice	Training Assistant
Jerry Odle	Mine Safety Inspector

MINE SAFETY AND HEALTH ADMINISTRATION

David L. Whitcomb	Assistant District Manager
Steven R. Kattenbraker	Supervisory Coal Mine Safety and Health Inspector
Mark A. Odum	Supervisory Mining Engineer (Roof Control)
Michael D. Rennie	Coal Mine Safety and Health Inspector

Jimmy Mike Conley	Coal Mine Safety and Health Inspector (Special Investigations)
Dennis R. Plab	Coal Mine Safety and Health Specialist (Roof Control)
Jerry R. Fitzpatrick	Coal Mine Safety and Health Inspector
Leland R. Payne	Mine Safety and Health Specialist Educational Field Services

APPENDIX B

Listed below are those persons who were interviewed or provided information that was pertinent to the investigation:

WABASH COUNTY OFFICIALS

Craig S. Racster	Deputy Coroner Wabash County
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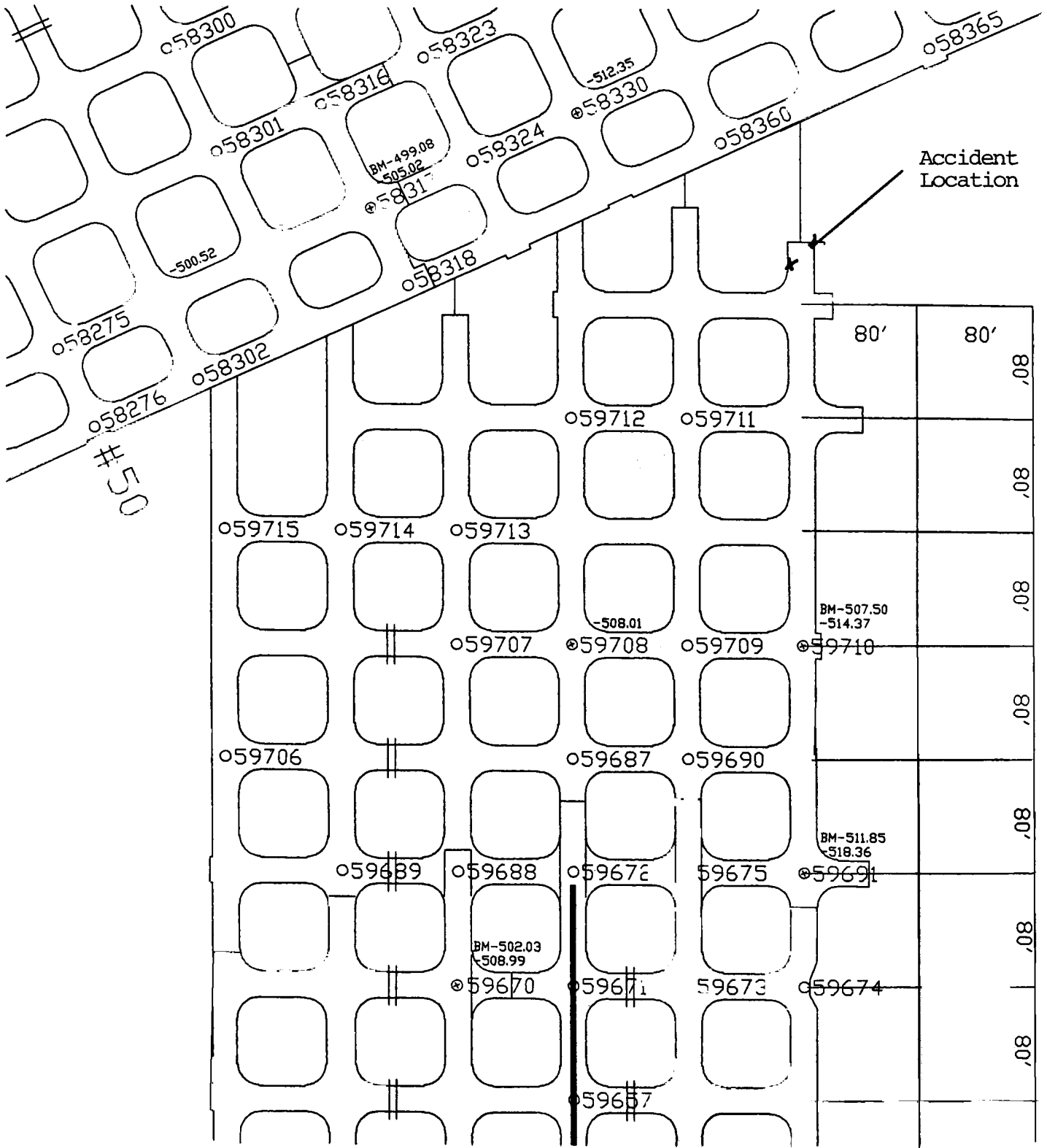
WABASH GENERAL AMBULANCE SERVICE

Raymond Giffin	Paramedic
Karen Rahmoeller	Paramedic
Christopher Wagner	Paramedic

WABASH MINE HOLDING COMPANY EMPLOYEES

Joe Hamilton	Examiner
Al Mason	Mining Machine Operator
Eddie White	Mining Machine Operator
Lee McRay	Roof Bolter Operator
Janice Davidson	Roof Bolter Operator
John Garner	Roof Bolter Operator
George Houchins	Ram Car Operator
Richard Cummins	Ram Car Operator
Larry Henshaw	Ram Car Operator
Michael Memmering	Scoop Operator
Ray Evans	B-2 Unit Foreman
John Hohn	Main D Unit Foreman/ EMT

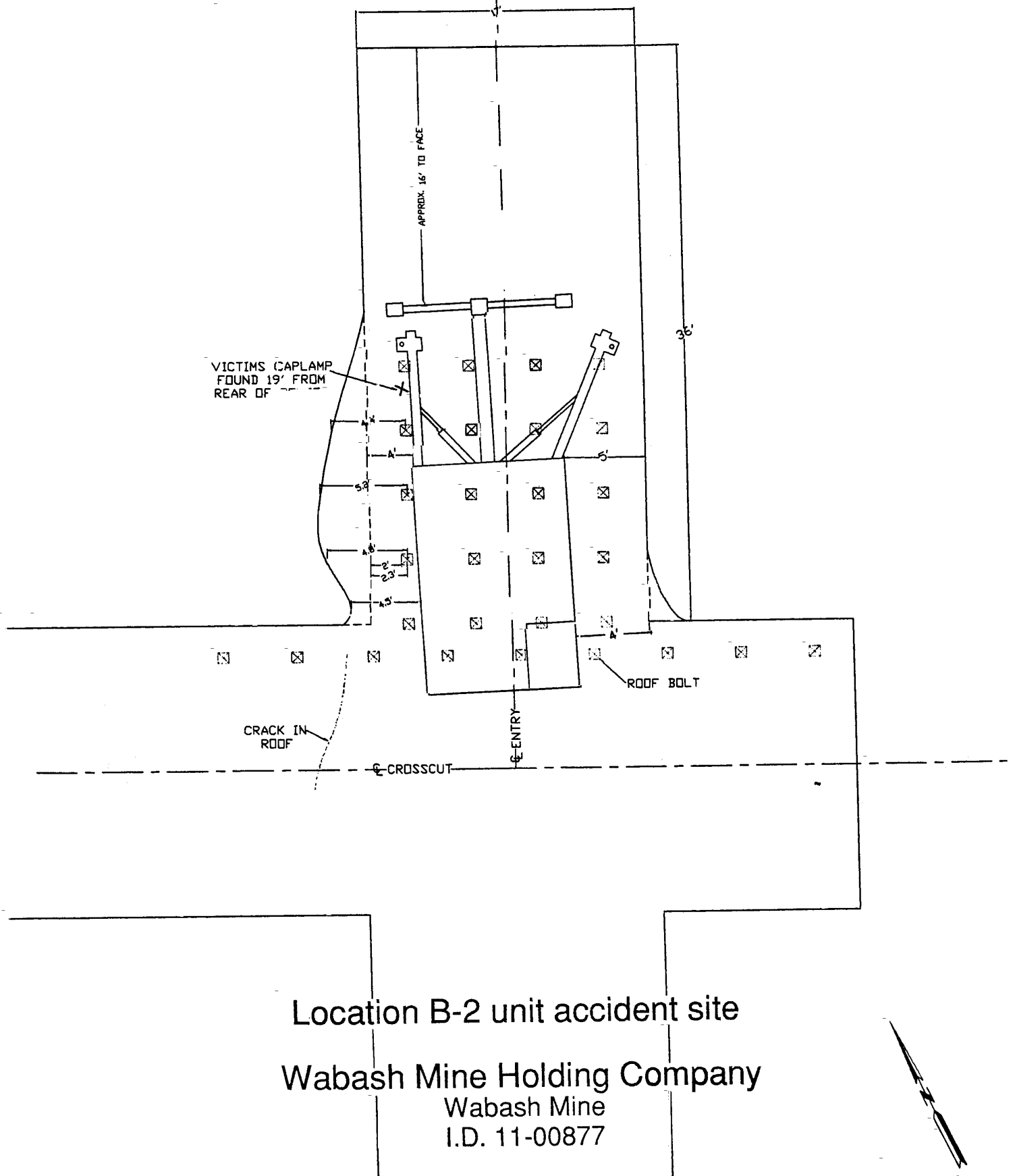
APPENDIX C



B2- UNIT LOCATION

Wabash Mine Holding Company
Wabash Mine
I.D. 11-00877

APPENDIX D





Fatal Fall of Rib Accident
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